CHAPTER I

HISTORY OF STORMWATER MANAGEMENT IN FAIRFAX COUNTY

The needs and expectations of Fairfax County's citizens with regard to stormwater management have changed dramatically since the mid part of the 20th century when suburban development first began to transform the County's landscape. Between 1930 and 1960, as the County grew from a population of 25,264 to 275,002, stormwater management consisted primarily of the development of disconnected systems of pipes and ditches to serve the needs of individual communities. These systems were built to prevent localized flooding by conveying stormwater runoff to natural channels as efficiently as possible.

In the late 1950s and early 1960s, the County moved to proactively address some of the problems caused by uncontrolled stormwater runoff. The County contracted with the U.S. Geological Survey to delineate 100-year floodplains, and in 1959, the County adopted its first Flood Plain Ordinance. Also in the 1960s, a series of six impoundments were constructed in the Pohick Creek watershed as part of a federally assisted pilot program (PL-566) to attempt to control flooding and sedimentation ahead of anticipated development. This Pohick Watershed Project, approved in 1967, resulted in Woodglen, Royal, Braddock, Barton, Huntsman, and Mercer lakes. Also in 1967, the County adopted the Erosion and Sediment Control Ordinance, which became the model for the State Erosion and Sediment Control Law in 1972.

In 1964, the County adopted its first Policy and Guidelines Manual – the precursor to the Public Facilities Manual. These early guidelines called for adequate drainage for new development, which was usually achieved through simple curb and gutter construction leading to concrete pipes and then the nearest stream. While these new requirements solved flooding problems from smaller storms, they increased peak flows during larger storms, causing severe erosion problems and downstream flooding. During this time, the County began the practice of collecting developer contributions (pro rata shares) for construction of major improvements to downstream channels.

Beginning in the late 1960s and early 1970s, as the County's population surged past 450,000, there was increased recognition that a more comprehensive and systematic approach to stormwater management was needed as natural systems became overwhelmed and flooding and erosion became serious problems. The County began to require all new development to manage stormwater by reducing peak flow rates of the two-year and ten-year design storms to pre-development peak flow rates. The County also incorporated the Environmental Quality Corridor (EQC) policy into the Comprehensive Plan as a way to protect areas adjacent to streams from development.

While these new efforts served to reduce the impacts of new development, several decades of suburban development had already caused significant problems. In an effort to find long-range solutions and to plan for future needs, the Board of Supervisors initiated the development of a Master Plan for Flood Control and Drainage in 1972. This process consisted of dividing the County into nine groups of watersheds. The first

watershed to be studied was the Pohick Creek watershed. The final plan, performed for a group of eleven watersheds collectively called the Occoquan Watersheds, was completed in April 1979. These plans utilized computer-projected runoff simulations through the year 2000 to make recommendations on projects to solve both immediate and future needs. The focus of the plans were on sediment and debris accumulation, bank protection and stabilization, and flood-proofing, with only secondary consideration for water quality and habitat protection.

Water quality concerns started to come to the forefront in the mid-1970s largely in response to the deteriorating condition of the Occoquan Reservoir. On July 26, 1982, the Board of Supervisors down-zoned nearly 41,000 acres of the Occoquan Watershed to the Residential-Conservation (RC) District, or one dwelling unit per five acres. At the same time, the Board created a Water Supply Protection Overlay District (WSPOD), implementing water quality Best Management Practice (BMP) controls on approximately 63,000 acres – the first such requirements in the County.

In the mid-1980s, the County turned its attention to the potential for regional ponds (serving between 100 and 300 acres) to control and treat large areas of development more efficiently than facilities serving individual properties. The use of regional ponds was also seen as a way of reducing the overall maintenance burden. The Board of Supervisors commissioned a study to examine approximately 100 square miles of the developing western portion of the County for potential regional stormwater management pond sites. On January 23, 1989 the Board adopted the Regional Stormwater Management Plan. The original plan identified 134 sites, primarily in the western part of the County. Currently, there are approximately 150 planned regional pond facilities, with 46 sites actually constructed and operational.

The focus of stormwater management continued to shift towards water quality and habitat protection in the mid-1980s with the 1987 amendments to the federal Clean Water Act and the 1987 Virginia Chesapeake Bay Preservation Act. In response to the Chesapeake Bay Preservation Act, the Board of Supervisors adopted the Chesapeake Bay Preservation Ordinance (CBPO) in March 1993. The CBPO protected certain areas along tributary streams as Resource Protection Areas (RPAs). The CBPO also effectively extended the water quality BMP requirements adopted for the Occoquan Watershed to County-wide.

The 1987 Clean Water Act amendments required the County to obtain a Virginia Pollutant Discharge Elimination System (VPDES) permit from the Department of Environmental Quality to discharge stormwater through its municipal separate storm sewer system. Originally issued by the County on January 24, 1997, the permit was re-issued on January 24, 2002. The permit allows the County to discharge stormwater through its outfalls provided that the stormwater is managed to reduce nonpoint source pollution to the “maximum extent practicable.” This permit has been a significant driver behind the County’s current stormwater management program.

The late 1990s witnessed additional significant changes as the Total Maximum Daily Load (TMDL) requirements of the federal Clean Water Act focused efforts on cleaning up specific stream segments designated as violating State water quality standards. A total of 17 streams draining portions of Fairfax County are on the State’s 2002 “impaired waters” listing, with additional streams likely to be added in 2004. TMDLs have been developed for Accotink Creek and Four Mile Run. A significant outgrowth of the TMDL

requirements was the Chesapeake Bay 2000 Agreement, which committed Virginia to removing the Chesapeake Bay from the U.S. EPA's list of impaired waters by the year 2010. While the 2000 Chesapeake Bay Agreement is non-regulatory, failure to meet its water quality commitments could result in the imposition of a TMDL on the entire Chesapeake Bay watershed.

At the turn of the 21st century, as the County's population surged toward the one million mark, the County's stormwater program again shifted. In 1998, the County launched an ambitious stream protection initiative that reflected a new focus not only on chemical water quality but on the health of the aquatic ecosystem. The Stream Protection Strategy (SPS) Baseline Study, published in January 2001, provided a snapshot of the condition of the County's streams using biological indicators. Based on the results of this study, the County commenced a watershed planning initiative in October 2001 to develop Watershed Management Plans for all 30 watersheds over a five to seven year period. The new Watershed Management Plans will update the Master Drainage Plans for flood control and storm drainage improvements developed during the 1970s. In addition to storm drainage and flood control, the plans will also address the restoration of stream habitat and implementation of strategies to protect stream ecosystems. These Watershed Management Plans also represent a shift in how the public is involved in stormwater management – both as a way to educate the public about stormwater issues and to foster public support for proposed solutions.

The County has also begun to integrate this new focus into older plans and policies. In January 2001, the Board of Supervisors accepted an Infill and Residential Development Study that provided recommendations to increase the effectiveness of policies regarding erosion control and storm drainage. In early 2002, the Board of Supervisors, reacting to increased citizen concern over the effectiveness of the regional pond program created a subcommittee to examine the role of regional ponds as well as other alternative types of stormwater controls as watershed management tools. The resulting document, called The Role of Regional Ponds in Fairfax County's Watershed Management, provides a framework to help facilitate the merging of stormwater management goals with watershed protection and restoration goals. Also in 2002, the Board celebrated the 20th anniversary of the Occoquan Watershed downzoning. This celebration included the establishment of a New Millennium Occoquan Watershed Task Force, which presented a series of recommendations to the Board on January 27, 2003 to address emerging watershed management issues.

While traditional means of stormwater management are still an integral part of the County's program, the shift towards protection of aquatic habitats has brought stormwater management full circle in that many techniques are now designed to retain stormwater on-site and allow infiltration into the soil. Techniques such as low impact development, or LID, aim to reduce or eliminate the impacts of impervious surfaces through natural systems and the incorporation of micro-BMPs such as rain gardens. At the same time, the County has also shifted from a protection paradigm to a restoration paradigm, working with citizens and watershed organizations to stabilize and restore stream reaches degraded by over a half century of stormwater impacts.

In 2003, as part of larger County-led effort, the leadership of the Stormwater Business Area of the Department of Public Works and Environmental Services engaged in a strategic planning exercise as a way to help refocus stormwater management efforts in light of new paradigm shifts, increasing expectations of County citizens, and an

increasingly complicated State and federal regulatory framework. The effort included interviews with outside stakeholder groups and a series of facilitated work sessions to identify major issues as well as strengths, opportunities, weaknesses, and threats. Two basic themes emerged from this process – (1) that levels of service for stormwater management should be based on a clear understanding of actual needs, and (2) that the selected level of service must be supported by an adequate and stable source of funding. To address these issues, and to provide a decision making tool for the Board of Supervisors regarding levels of service and funding mechanisms, the Strategic Plan contained tactics to "develop a funding plan for programs to reflect changing service levels, increased infrastructure inventories, unfunded mandates, and emergency events" and to "develop and implement a funding feasibility study for alternative methods and funding sources." This Watershed Community Needs Assessment and Funding Options Study, presented in the following pages, implements these tactics and represents the first step towards positioning the County to meet its strategic stormwater management goals.